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Docket No. 50-346

License Number NPF-3

Serial Number 3096

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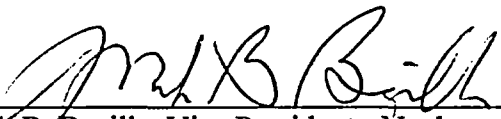
Subject: Response to Generic Letter 2004-01: "Requirements for Steam Generator Tube Inspections"

Ladies and Gentlemen:

This letter provides information in response to Generic Letter 2004-01: "Requirements for Steam Generator Tube Inspections," dated August 30, 2004. The generic letter requested information concerning compliance with the steam generator tube inspection requirements. The requested information for the Davis-Besse Nuclear Power Station Unit Number 1 is provided in the attachment to this letter.

If you have questions or require additional information, please contact Mr. Henry L. Hegrat, at (330) 315-6944.

The statements contained in this submittal, including its associated enclosures and attachments, are true and correct to the best of my knowledge and belief. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: OCT. 29, 2004By: 
Mark B. Bezilla, Vice President - Nuclear

MAR

Attachment
Enclosure

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cc: J. L. Caldwell, Regional Administrator, NRC Region III
J. B. Hopkins, NRC/NRR Senior Project Manager
C. S. Thomas, NRC Region III, DB-1 Senior Resident Inspector
Utility Radiological Safety Board

Response to Generic Letter 2004-01, "Requirements for Steam Generator Tube Inspections," for the Davis-Besse Nuclear Power Station

NRC Generic Letter 2004-01, "Requirements for Steam Generator Tube Inspections," dated August 30, 2004, was sent to all holders of operating licenses for pressurized-water reactors (PWRs), except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

The generic letter requested the following information within 60 days:

Requested Information 1

Addressees should provide a description of the SG [Steam Generator] tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS [Technical Specifications] in conjunction with Criteria IX and XI of 10 CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.

Response:

Background

Davis-Besse has two Babcock and Wilcox (B&W) designed 177FA once through steam generators (OTSGs). Each OTSG contains 15,457 sensitized Inconel-600 (I-600) tubes that have a nominal outer diameter of 0.625 inch with a nominal wall thickness of 0.037 inch. Each tube is supported by 15 tube support plates (TSPs) that are 1.5-inches thick carbon steel and have trefoil broached holes, except for the 15th TSP, which has drilled holes for the tubes at the outer periphery of the tube bundles. The upper and lower tube ends are roll-expanded to a minimum depth of 1.0 inch from the primary face of the tubesheet, and fillet welds exist between the primary face of the tubesheet and the tube ends.

The unit operates on approximately a 24-month fuel cycle.

The Davis-Besse steam generators had operated for approximately 15.8 effective full power years (EFPY) at the time of their last inspection in March 2002, during the unit's thirteenth refueling outage. Information related to this inspection has previously been provided to the NRC in letters dated March 22, 2002 (Serial Number 2771), April 25,

2002 (Serial Number 2768), March 31, 2003 (Serial Number 2944), November 3, 2003 (Serial Number 2989), December 17, 2003 (Serial Number 3013), and January 7, 2004 (Serial Number 3016). Additionally, results of this inspection were discussed in relation to a license amendment that permitted a one-time extension of the steam generator tube inspection surveillance interval. Information related to this amendment was provided to the NRC in letters dated December 16, 2003 (Serial Number 3000), January 29, 2004 (Serial Number 3023), and February 13, 2004 (Serial Number 3030).

Previous Inspection Information

In addition to the TS inspection requirements, a degradation assessment utilized the *EPRI PWR SG Examination Guidelines* in effect at the time of the inspection and available industry data for steam generators of similar design to determine possible damage mechanisms that may exist in the steam generators. Once the possible damage mechanisms were identified, qualified inspection techniques were used to inspect for the damage mechanisms in the respective areas. The March 2002 refueling outage steam generator tube eddy current inspection scope and methodology are summarized in Table 1.

As previously discussed, Davis-Besse performed an assessment to determine the types of degradation that potentially could occur along the length of a tube, to ensure that appropriate inspection techniques were applied to detect possible degradation that may have been present, and to ensure that tube repairs were performed to maintain the integrity of the OTSGs. These measures ensured that the requirements of the plant's TS, 10 CFR Part 50, Appendix B Criteria IX, "Control of Special Processes," XI, "Test Control," and XVI, "Corrective Action," were satisfied.

Conclusion:

Based on the information provided in Table 1 and the discussion above, the Davis-Besse SG tube inspection methodology is consistent with the NRC's position as provided in Generic Letter 2004-01.

Table 1: Davis-Besse 13RFO Inspection Scope

Item	Steam Generator Region	Inspection Probe	Inspection Scope and Extent
1	Full Length of Tube (Note 1)	Bobbin	All in-service tubes
2	Dents ≥ 2.5 Volts (Note 2)	Plus Point Pancake	100% down to the 14th TSP elevation and 60% of the remaining dent population
3	Sludge Pile / Lower Tube Sheet Crevice / Kidney Region Lower Tubesheet Secondary Face +4" to -16"	Plus Point Pancake	23% of the defined lower tube sheet sludge pile region
4	Upper Tube Roll Expansions	Plus Point Pancake	57% of all in-service tubes
5	Non-Stress Relieved Tube Sheet Rolls	Plus Point Pancake	All in-service non-stress relieved tube sheet roll expansions
6	Lane and Wedge – 15 TSP ± 1 inch and Upper Tubesheet Secondary Face -1 inch to + 4 inches	Plus Point Pancake	100% non-sleeved tubes bordering sleeved region
7	Bobbin Indications (Note 3)	Plus Point Pancake	All tubes with flaw like indications, 100% non-quantifiable indications (I-Codes) and wear from bobbin inspection
8	Alloy 690 Sleeves – Unexpanded Region	Bobbin	All in-service sleeves
9	Alloy 690 Sleeves – Upper and Lower Roll Transitions	Plus Point	OTSG 1-B: 59% in-service sleeves OTSG 2-A: 64% in-service sleeves
10	Possible Plugged Tube Sever Assessment	Deplug tubes at risk, check for water and perform profileometry and inspect with Bobbin Coil	100% of tubes at risk
11	Profileometry and inspect of All deplugged tubes	Inspect for water and inspect with Bobbin Coil	100% of tubes deplugged for repair improvements (stabilizer replacement or welded plug replacement)

Notes for Table 1:

1. Full-length of the tube is defined as completely from point of entry to point of exit. The previously existing tube and tube roll, outboard of a new roll area in the tube sheet, is excluded from future periodic inspection requirements because it is no longer part of the pressure boundary after a repair roll is installed.
2. Davis-Besse does not use the "ding" nomenclature; all indications of mechanical tube deformation are called "dents."
3. Plus Point probe inspection was performed on bobbin coil indications of possible degradation, including those indications that were potentially developing in all recorded permeability variation indications, all recorded pilgering indications, all manufacture burnish marks, and all recorded indications in dents. Wear indications on bobbin coil inspection were confirmed with Plus Point.

Requested Information 2

If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective actions, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tubesheet and where the extent of the inspection in the tubesheet region is limited.

Response:

As stated in response to question 1, for Davis-Besse, all areas of potential and non-active damage mechanisms, as determined by the unit and outage specific degradation assessment, were inspected using qualified inspection techniques. Therefore, Davis-Besse is consistent with its TS in conjunction with 10 CFR Part 50, Appendix B Criteria.

Requested Information 3

For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a justification for continued operation based on maintaining tube structural and leakage integrity) that addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS, where flaws have the potential to exist and inspection techniques capable of detecting these flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of the tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10 CFR 50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.

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Response:

Not applicable based on response to question 2 above.

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COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Supervisor – Fleet Licensing (330-315-6944) of any questions regarding this document or any associated regulatory commitments.

<u>COMMITMENT</u>	<u>DUE DATE</u>
None	N/A